MATRX CONTINU FRACIONS RELTD T 1ST-ORDER LINEAR RECURRENCE SYSTEMS*

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Abstract. We introduce a matrix continued fraction associated with the first-order linear recurrence system $Y_k = \theta_k Y_{k-1}$. A Pincherle type convergence theorem is proved. We show that the $n$-th order linear recurrence relation and previous generalizations of ordinary continued fractions form a special case. We give an application for the numerical computation of a non-dominant solution and discuss special cases where $\theta_k$ is constant for all $k$ and the limiting case where $\lim_{k \to +\infty} \theta_k$ is constant. Finally the notion of adjoint fraction is introduced which generalizes the notion of the adjoint of a recurrence relation of order $n$.

Key words. recurrence systems, recurrence relations, matrix continued fractions, non-dominant solutions.

AMS subject classifications. 40A15, 65Q05.

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